

Human Ethology Newsletter

1979

#24

Editor Cheryl Travis Dept. of Psychology

Univ. of Tenn. Knoxville, Tenn. 37916

COMMITTEE MEMBERSHIP

Several working committees were recommended at the 1978 annual meeting. These committees were: 1. constitution and bylaws, 2. nominations and elections, 3. international meetings, 4. national meetings, 5. publications, 6. membership. Some people have already indicated their interest in serving on one of these committees, however, the offer of participation and involvement is being extended once more. If you want to be involved in the International Society for Human Ethology please write of your interest to Cheryl Travis, Dept. of Psychology, Univ. of Tennessee, Knoxville, TN 37916, USA. Formal committee membership will be finalized over the next three months.

If you cannot serve on a committee, but feel there are certain issues or problems you would like a particular committee to address, please send your comments and observations to the editor. These will be forwarded to committee participants for consideration.

HUMAN ETHOLOGY ABSTRACTS

Human Ethology Abstracts III is now in preparation and is expected to be published in Man-Environment Systems in 1979. Bob Adams is editing this project.

Anyone who sent a manuscript to Bob prior to November 16 and who has not received acknowledgment is encouraged to resubmit. The mail plane crashed and burned approaching Hays International Airport.

A number of submissions which have been received by Bob are under review for complete publication in a journal. Bob would appreciate an update on the status of any of these manuscripts so that information on journal, volume numbers, etc. can be included in the citation of the abstracts.

Please send copies of any completed manuscripts, published or unpublished, for consideration. In the case of manuscripts such as book chapters which contain no abstracts, your submission of an abstract would be helpful. Please send manuscripts and abstracts as soon as possible to:

Dr. Robert Adams
Dept. of Psychology
Fort Hays State University
Hays, Kansas 67601 USA

HUMAN ETHOLOGY NEWSLETTER

The Human Ethology Newsletter is published on a quarterly basis. The subscription price is \$3.00. Subscriptions are calculated on an annual calendar year basis from January - January. If you have not renewed your subscription do so now! The newsletter is mailed first class, air mail to all subscribers, and is subsidized by the Department of Psychology at the University of Tennessee. Notify your friends and colleagues of this tremendous bargain. If you have not renewed your subscription to the newsletter by March 20, 1979, you will be dropped from the mailing list. Since this is the only regular means of communication for members of the International Society for Human Ethology, it is important that the readership be extensive.

NOTICE OF POSITION BEGINNING SEPTEMBER, 1979

Assistant Professor, Institute of Child Development, College of Education, University of Minnesota.

Applicants should be well qualified new or recent Ph.D.'s in the developmental sciences with interests and competence in the biological bases of behavioral development, broadly construed. Examples of specialization include physiological, behavior-genetic, ethological/ecological or other biologically-based perspectives on: family and group relations; cross cultural socialization and cognitive/perceptual development; neurophysiological development; hormones/nutrition and development. Teaching responsibilities include introductory child psychology or adolescent psychology.

Salary is open and competitive.

Position will be available Sept. 16, 1979, on a regular (tenure track) nine-month appointment.

Applications should be received on or before January 31, 1979 for adequate consideration. Selection of the final candidate will be made on or before April 1, 1979.

Interested persons should send copies of their curriculum vitae and three letters of recommendations to:

Professor W. Andrew Collins, Chairperson,
Search Committee
Institute of Child Development
104 Child Development, 51 East River Road
University of Minnesota
Minneapolis, Minnesota 55455

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap.

EVOLUTIONARY BEHAVIORIST--The Dept. of Zoology at the University of Tennessee is seeking an animal behaviorist with particular interest in evolutionary biology to join our graduate faculty in ethology. Preference will be given to persons with training in population or behavioral genetics. This is a tenure track position which will be filled at the assistant or associate professor level for September, 1979. Duties will include teaching at the undergraduate and graduate levels, participating in the development of a multidisciplinary program in ethology and maintenance of an active research program. Applicants should forward their curriculum vitae and three references by March 15, 1979 to Susan E. Riechert, Dept. of Zoology, Univ. of Tennessee, Knoxville, TN 37916.

UTK is an EEO/Title IX/Section 504/Employer

ADVANCED STUDY INSTITUTE
on Methods of Nonverbal Communication Research

September 6-17, 1979, Montpellier, France

A comprehensive series of lectures, workshops, and audio-visual demonstrations on methodology in nonverbal communication research. Topics include: observational methods; audiovisual techniques; the measurement of face, body, voice, gaze, proxemics, the use of judgment studies, problems of assessment of multichannel configurations and face-to-face interaction processes, ethnomethodological and structural approaches, sequential and cluster analyses.

Directors: Paul Ekman and Klaus R. Scherer

Faculty includes: M. von Cranach, H. Ellgring, W.V. Friesen, P. Garrigues, E. Goffman, G. Jefferson, J. van Hooff, A. Kendon, J. Laver, P. Ricci-Bitti, H. Rosenfeld, R. Rosenthal, H. Wallbott.

Sponsors: NATO Scientific Affairs Division and national funding organizations.

Participants: Advanced graduate students and faculty are invited to apply by sending a vita and a representative reprint (and/or dissertation

proposal in the case of graduate students). Graduate students should ask two faculty members to send letters of support. Participants are expected to obtain financial support from organizations in their own country. If graduate students are unable to obtain such support, request for financial assistance should be included in the application. The deadline for application is April 1, 1979. Send materials to:

In the U.S. and Canada:

Advance Study Institute
Paul Ekman
Dept. of Psychiatry
Univ. of California, San Francisco
401 Parnassus
San Francisco, California 94143

In Europe:

Advance Study Institute
Klaus R. Scherer
Fachbereich 06 Psychologie
der Justus Liebig-Universität
63 Giessen
Otto Behagel-Str. 10
West Germany

ANIMAL BEHAVIOR SOCIETY

Call for Papers for the 1979 Animal Behavior Society Annual Meeting at Tulane University, New Orleans, Louisiana, June 11-15 1979. Forms are included in this newsletter. Transmittal forms and abstracts should be forwarded to the Program Officer, Joan Lockard Ph.D., RI-20, University of Washington, Seattle Washington 98195 no later than March 9, 1979. Rejection by late submission only. ABS members may present one contributed paper only (with the exception of invited papers, poster sessions or films) or sponsor one paper presented by a non-member.

Allee Award- Competition for the Best Student Paper at the next ABS meeting may be entered by indicating your intention on the transmittal form and by submitting four copies of a written version of the paper not to exceed 7 pages of double-spaced typewritten text. Any independent student research which is unpublished at the time of submission for competition is eligible so long as the entrant has not competed before and has not had the final defense of a doctoral dissertation by the time of the ABS meeting. Send transmittal form (marked Allee Award competition) and abstract to Joan Lockard at the above address and copies of the manuscript to Edward Price, Dept. of Animal Science, Univ. of California,

Davis, California 95616.

Special Note: Those persons interested in chairing a paper session, please check #7 on the transmittal form.

Transmittal forms are attached at the end of the newsletter.

COMMENT ON METHODS

Observations on Naturalistic Observation:
Some Issues Concerning Classes of Information
Obtained and Generalizability versus Specificity.

L. Stettner

Wayne State Univ. - Dept. of Psychology

In the course of conducting research on parental behavior in a naturalistic context (a public playground) a series of problems arose that raised some general issues that we need to address when carrying out and evaluating naturalistic studies. Observation in naturalistic contexts is now widely regarded as of prime importance by many behavioral scientists, particularly in the area of child development. Although such studies have an inherent ecological validity, they pose problems which could severely limit their usefulness if not addressed appropriately.

The first set of issues that arose concerns the type of information obtained. Although we set out to collect data on specific aspects of parent behavior, the context of our study required us to gather other information that was "behavioral" but at a different level. For conceptual clarity we ultimately divided the behavioral information obtained into three categories:

A. Behavioral Demographics

We recorded the composition of each parent-child group sampled (age, sex, number of individuals) as well as how long they stayed in the park and what the population density of the park was at the time. Behavioral demographics reflect decisions by individuals to behave in such a way that they are physically present at a particular place within a given time period.

B. Ecobehavioral Information

Each play activity in the park centered around specific equipment or other environmental features that make specific behavioral demands and thus structure much of the interaction between individuals. We gathered information about the choices of activities engaged in, including the sequence of entering into each and duration of involvement. We were thus "pulled" into evaluating the popularity of different playground activities, although in no way was this part of the original concern of our study.

C. Behavioral interaction

The third category reflects choices among measures of the type with which we are more generally familiar. Many strategies for data collection exist within this category and there are vast differences in the level of detail, interpretation, etc. These considerations are beyond the scope of this paper. We recorded such things as the distance between parent and child, position of parent relative to activity, parental posture, visual orientation, expressive behavior, communication involved in transition from one activity to the next, and the degree of "involvement" (observer rating) of the parent.

The usual focus of investigation in developmental studies is at the level of behavioral interaction, but a comprehensive approach to naturalistic observation absolute requires that we collect information in the behavioral demographic and ecobehavioral categories as well. In fact, a major goal of many naturalistic studies should be to fill in the gaps in our information at these levels. In many cases there is no need to include the much more costly and time consuming recording of behavioral interaction data.

The classic question about generality is of course that of how representative of the larger population is the sample studied with respect to the measures recorded. Special considerations in naturalistic study with respect to this issue stem from self-selection by subjects, data recording at different levels, limits on information about personal background of subjects (and thus the need for sociological information), and the fact that naturalistic observation in the biological sciences often has the goal of specifying characteristics of a particular, localized sub-population of organisms. It is further suggested that different levels of information recorded are likely to have different degrees of generalizability. For example, micro-details of movement and facial expression are likely to be highly generalizable, species-wide, whereas behavioral demographic information about how many fathers show up at the park on Saturday is more likely to be highly specific to the particular area studied.

BOOKS

Readers may wish to acquire an english translation to be published in the spring of 1979. Eibl-Eibesfeldt, I. The Biology of Peace and War. New York: Viking Press, 1979.

BOOK REVIEWS

The Development of Behavior: Comparative and Evolutionary Aspects.
 Edited by Gordon M. Burghardt and Marc Bekoff.
 New York: Garland STPM Press, 1978. \$32.50

The twenty contributions in this edited book were first presented at the Animal Behavior Society's 1977 annual meeting in a symposium entitled, "Comparative and Evolutionary Aspects of Behavioral Development." The symposium sought to bring together workers studying "the development of behavior from a variety of approaches in a diverse array of organisms." The resulting volume reflects the editors' beliefs that the study of development has proceeded with too much grand theorizing and too little good comparative data. They present a truly eclectic collection of papers. Development in a wide variety of vertebrate and invertebrate species is described, including display behavior in *Drosophila*, reproductive behavior in fish, and play behavior in pre-school age humans. Methodologies range from the more traditional ethological studies of Topoff and Mirenda on the "precocial ant," to the ingenious measurements of behavioral variability in mollusc shells and fossils by Berg, to the multivariate statistical approach of M. Bekoff on Adelie penguin comfort movements. Some papers like McDiarmid's, "Evolution of Parental Care in Frogs," are comparative and based on extensive literature review, while others, like A. Bekoff's study of coordinated behavior in chick embryos, concentrate on current research. Of special interest to human ethologists is the twin study reported by Plomin and Rowe showing a genetic component of social responsiveness to strangers. Mason's laboratory study of rhesus monkey cognitive development and Altmann's longitudinal field study of baboon infant independence complement each other well in unravelling the complex implications of the mother-infant bond.

This volume is most successful in illustrating the diversity of developmental systems and in presenting some of the exciting frontiers of developmental research. But this wide focus is also the book's weakness. Without theory or theme, the book has no coherence. The organiza-

tion of the individual papers into chapters ("An Invertebrate Sampler." "Music, Play and Tools.") seems totally capricious. It would have helped this reader if the editors had provided interpretative essays or invited comments which focused this potpourri on fundamental questions in behavioral development. Without this, the collection remains a compilation of some strong papers with nowhere to go.

Esther Thelen
 Department of Psychology
 University of Missouri
 Columbia

Evolution of Play Behavior
 (Ed) D. Muller-Schwarze
 Dowden, Hutchinson & Ross, Inc: Benchmark
 Papers in Animal Behavior, Vol. 10, 1978
 \$32.00

This is a reprint collection of 30 papers on play. About half are 'classic' papers, or extracts - bits from Spencer, Groos, Hall, and Piaget, articles by Beach, Schlosberg, and Loizos. There are also a number of reprints of more detailed articles on play in particular species, such as raccoons, polecats, sealions, and three articles on play in birds are included. Muller-Schwarze links blocks of 3 or 4 related papers together with Editor's Comments, and these include useful lists of references as additional reading. Several extracts are welcome English translations from German originals; German authors are, not surprisingly, well represented. The articles are reproduced in the original book or journal format, which I found made for an attractive variety when reading through.

The collection is therefore a good 'background' book, with a few items which even well-read play researchers may not have come across. However play research seems to be moving fast at the moment and the collection is not very up-to-date. Bekoff's more recent work is not mentioned, nor are any of Fagen's writings. Symons' book "play and Aggression" was too recent to be mentioned but has given a fresh review of this area. Human play is limited to early work by Hutt and Blurton Jones. Finally, the title is misleading; the evolution of play behavior is not discussed and evolution is not in the subject index. The book would be worth getting for library use, but is expensive for individual readers.

Peter K. Smith, Dept. of Psychology,
 Univ. of Sheffield, Sheffield, England.

FORUM

Measuring Adaptation in Man

Michael T. McGuire
Dept. of Psychiatry
Univ. of California, L.A.

The following Forum topic was introduced in an earlier issue of HEN:

"It seems likely that over the next decade ethologists and sociobiologists increasingly will turn their attention to the study of man. If so, a number of theoretical and methodological problems can be anticipated. One concern is the definition of adaptation. Wilson (1975) defines it as follows: "...any structure, physiological process, or behavioral pattern that makes an organism more fit to survive and reproduce in comparison with other members of the same species." (p.577). This definition has worked well enough for many nonhuman species. But with man, a long life span, the possibility of delaying child bearing, extended male fertility, etc., make research using this definition difficult. Thus, a case can be made for developing approaches to estimating adaptation in living individuals or populations. Comments are invited on how such approaches might be developed.

One possible approach to this problem is statistical. For example, a large population might be studied and profiles of adaptation determined, presumably qualified by such variables as sex, age, class, etc. By profiles of adaptation I mean sets of adaptive behaviors. Deviations from these profiles could then be established for subpopulations. An alternate approach would be to focus on individuals. Here the problem would be to assess what behaviors are likely to be competitively advantageous relative to an appropriate referent. Both approaches are plagued with methodological problems."

In response to this topic, Joan Lockhard writes:

"In wrestling with methodological approaches myself to the study of human social behavior, I have implicitly touched on the problem of assessing adaptation. Although unable to resolve the issue to my complete satisfaction, I have found some comfort in applying the approach which has survived the test of the physical and biological sciences in general and animal behavior in particular. In this regard, Homo sapiens are not exceptions but, merely through their versatility, make it more difficult for behavioral researchers to focus

the questions so that empirical answers are likely. Nor is it a matter of either/or, but rather when is it more productive to use a statistical orientation, and when is the study of behaviors of individuals appropriate. The scientific steps are already well worked out and need only the insight to know how to apply them in the case of Man.

First, a phenomenon for study must be established so that further, more detailed inquiry, will be fruitful. Statistical information on subpopulations or descriptive accounts (in the naturalist sense) of "conservative" behaviors (in the physical anthropologist meaning of the adjective) often culminate in a host of hypotheses. For example, my own demographic research on how individuals group themselves in public, in terms of age, sex and number of members, has led to many fruitful studies on the adaptive mechanisms of parenting, courtship, mating and juvenile behaviors. In subsequent investigations, detailed studies of individuals and more sophisticated experimental design are essential. However, the effort and time such studies require are not begrudged at this stage, since I am reasonably certain that tangible outcomes and greater understanding are forthcoming. For me, a finding today must be somewhat "ageless" (at least in function if not in form) in order to even consider its possible adaptive significance. Proximal explanations of behaviors provide cues as to the present tools being employed by the study subjects to effect a benefit (and at what cost, in terms of natural selection). The scientific challenge is whether I am sufficiently astute to recognize the subtle and often disguised more distal intent and meaning of many behaviors and to also avoid the pitfall of using ultimate explanations to account for behaviors which are indeed false positives.

The guidelines I employ are to initially find human social behaviors which are prevalent and relatively consistent in the context in which they are manifested. Here traditional areas of animal behavior (e.g., grouping behavior, pair-bonding, mother-infant interactions, and intention movements) are helpful in establishing a promising focus. Alternatively, descriptive observations may reveal an area of productive pursuit. Then statistical profiles are acquired (with large N's) as to the relative

prevalence of the behaviors in the category of interest. Afterwards, this research is followed by studies which provide detailed information on individuals of the more salient behaviors. Subsequently, testable hypotheses (in terms of adaptive significance) are generated as to the conditions under which, by whom, and with what relative frequency particular behaviors will be exhibited. Finally, I must be willing to reject those hypotheses which are unsupported by the data and to continue to test (under different conditions, e.g., a related context or another culture) those predictions favored by the results.

It is obvious that I have taken solace in those techniques which have worked in many disciplines in the past, namely, the Scientific Method. Most importantly, I have stopped rationalizing away the meager progress in our field by suggesting that Man is unique. It is because I think he is not that the difficult research ahead seems worth the effort."

To me, Dr. Lockhard's response captures the major points of an empirical research strategy relevant to the study of man. While an almost frightening number of research details remain to be worked out--note, for example, the differences in research findings from studies of proxemics in preschool and early school children--there is no reason to doubt that the persistent use of the strategies Joan advocates will progressively yield a clearer picture of behavior and its relationship to environmental, social, and other variables.

A different set of problems appears when one attempts to interpret the adaptive significance of behaviors, especially if one's aim is to determine both (a) the ways in which and (b) the degrees to which certain behaviors are adaptive. One interpretative difficulty arises because behaviors must be translated into a biological paradigm in which cultural influences which are solely epiphenomenal (with respect to natural selection) are excluded. As examples of the difficulty of such an approach, consider the time spent by some adolescents in fad-related behavior or the consistent TV watching of many individuals. Obviously, relative frequency counts need not be informative; as suggested in the letter above, identifying form may neither elucidate nor be sufficient for presuming function.

One could, of course, concentrate one's research efforts on more obviously fundamental biological behaviors, such as reproductive success or the amount of time spent supporting genetic kin. But this approach can be very limiting when considering human behavior because it constricts the data base we would like to address. Our lives are so long and so varied that identifying function in diverse forms is a difficult if fascinating task which requires separating the evolutionarily relevant wheat from fadish chaff. For our concerns, both have form, but only one has function.

At issue here are two points, one of identification, the other of measurement: first, how much of everyday behavior can be satisfactorily explained (minimizing false positives) in terms of evolutionary biological theory; and, secondly, how may we assess the relative contribution of such behaviors in terms of their adaptive significance. Because there is no a priori way to answer these questions, we have adopted a method which seems to offer the possibility of a defensible research approach as well as the possibility of developing data which can be interpreted from an evolutionary perspective.

First, from the literature on both human and nonhuman primates we have identified and defined behavioral strategies that appear to be critical to optimizing inclusive fitness. Examples include: optimally investing in offspring, developing and securing resource access and control, establishing an adequate defense against predators, and establishing optimal kin- and social-support systems. Second, we then try to identify sets of overt behaviors and psychological states which are associated with these strategies and the capacity of individuals to carry out these behaviors. This is an empirical question. Results so far suggest a high degree of agreement across subjects with respect to their conscious estimates of the importance of certain overt behaviors and their relationships to different strategies. Third, we attempt to identify situations in which various adaptive strategies change in their relative importance. Fourth, we look at disadvantaged populations (e.g., populations suffering from psychiatric disorders) to determine their capacity to carry out

strategies and behaviors. Data from this group shows suboptimal capacities when compared to "normal" controls. Here, "disadvantaged" may be synonymous with having a lower reproductive success than do control populations.

Examples of ways in which estimates of adaptiveness can be made follow: First, a comparison between disadvantaged and control populations will allow us to identify those suboptimal behaviors and strategies which are associated with low reproductive rates as well as the increased incidence of psychiatric disorders (and, perhaps, medical disorders). Second, we will identify a group of individuals that are reproductively successful and compare their adaptive strategy and behavior profiles with individuals who have low reproductive success, matching them on potentially relevant dimensions such as the number of local kin. A third estimate may be developed in terms of individuals' capacities to alter adaptive strategies, given specific situations.

Such an approach has advantages and disadvantages. If the strategy categories we have developed are biologically relevant, then the method may provide answers to certain questions relating to adaptiveness more efficiently than a more empirically based method. Alternatively, if the categories are not biologically relevant (i.e., they represent biologically irrelevant forms of behavior), or only moderately so, then this method may do no more than provide interesting correlational data useful in identifying at-risk groups but irrelevant to evolutionary biology.

Wilson, E.O. *Sociobiology*. Cambridge, Harvard University Press, 1975.

MARCH FORUM

The March issue of the Forum will be concerned with the relevance of modern hunter-gatherers to the evolution of human behavior. One point of focus concerns the theoretical question of whether or not such groups are at all relevant. A second point of focus is a methodological issue, in that the extent to which information about such groups is relevant may be highly dependent on the type of methodology adopted.

Accordingly, the following statement is offered as a proposition for debate: Given appropriate methodology, recent hunter-gatherer groups are extremely relevant to the reconstruction of human behavioral evolution. One point of view might be that each hunter-gatherer group has its own unique recent

history and therefore cannot become a basis for generalization to Homo; the alternative point of view might be that information about such groups is not only relevant, but essential to a discipline of human ethology.

The topic was suggested by Glen King and he will edit this issue of the Forum. If you have any thoughts and care to express them formally, submit an essay to:

Dr. Glen King
Dept. of Anthropology
Monmouth College
West Long Branch, N.J. 07764
USA

JUNE FORUM

The forum section of the June newsletter will focus on E.O. Wilson's new book, On Human Nature. Those of you who care to participate in the forum should send your comments to Marjorie Elias at the address listed below.

Dr. Marjorie Elias
Enders M07
Children's Hospital Medical Center
300 Longwood Avenue
Boston, MA 02115 USA

NOTE

The essay by Jerome Barkow "Evolution and Human Sexuality," which appeared in the October issue of the newsletter was condensed from the English version of a chapter, "Evolution et Sexualite," in Claude Crepault and Josephy Levy, eds. *La Sexualite humaine: Textes fondamentaux*. Montreal: Presse de L'Universite du Quebec, 1978.

NEW JOURNAL

In Jan. 1978, the Academic Press began publishing the quarterly Journal of Social and Biological Structures: Studies in Human Sociology. Its aim is to facilitate a dialogue among scholars from a variety of disciplines who share theoretical ground concerning the relationships between sociology and biology. The editors welcome articles from many disciplines, including biology, anthropology, psychology, politics, linguistics, social organization, and human behavior. Subscription can be obtained from Academic Press, 111 Fifth Avenue, New York, NY 10003. \$35.00 per year.

Please return this form to:

Joan S. Lockard, Ph.D.
Department of Neurological Surgery
RI-20
University of Washington
Seattle, Washington 98195

ANIMAL BEHAVIOR SOCIETY
ANNUAL MEETING
June 11-15, 1979
Tulane University
New Orleans, Louisiana

1. Title of Paper: _____

2. Author(s):

First Name	Initial	Last Name	Institutional Affiliation
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3. Mailing address of the presenting author:

Telephone Number:

() _____

4. ABS Membership:

Status of presenting author:

_____ A regular member of ABS

_____ A student member of ABS

_____ A non-member who is a joint author with a member

_____ A non-member whose paper is introduced by _____

If multiple authors, please list those who are members of the Society.

5. Category of paper to be presented (abstract required for all types).

_____ 20-minute paper (includes discussion time)

_____ 10-minute paper (includes discussion time)

_____ Poster paper

6. Identify your paper according to animal group and principal subject category
(To be used by program officer in organizing and scheduling papers).

Animal Group (circle principal animal subjects)

Mammals (non-primate)

Birds

Crustaceans

Molluscs

Non-human primates

Herps

Insects

Other Invertebrates

Humans

Fishes

Arachnids

7. Would be willing to chair a paper session _____.

INSTRUCTIONS FOR PREPARING ABSTRACT

Abstracts should be typed in a 3 x 7 inch space, such as provided below. The entire abstract, including title, author(s), institutional affiliation(s), text and acknowledgements must be typed within the rectangle. Single space all typing, leaving no top or left margins. Use black ink for Greek letters and symbols not on your typewriter.

Abstracts will be photographed just as you submit them, so please follow the suggested format. Use an electric typewriter, if possible, with a good ribbon and make neat corrections. Elite type is preferred. Practice typing the abstract in a 3x7 inch rectangle before using the form below. The lines will be cut away prior to reproduction.

Please send the ORIGINAL PLUS ONE COPY of your abstract to the Program Officer along with the Transmittal Form. (Joan S. Lockard, Ph.D., Department of Neurological Surgery, RI-20, University of Washington, Seattle, Washington 98195).

Your abstract should be organized as follows:

1. Title
Authors (see example below)
2. A sentence stating the specific objective(s) of the study unless indicated by the title.
3. A brief description of methods, if pertinent.
4. A summary of the results obtained.
5. A statement of conclusions.

OVARIAN HORMONES AND FOOD HOARDING IN SYRIAN GOLD HAMSTERS (Mesocricetus auratus)

Daniel Q. Estep, University of Georgia, and David L. Lanier and Donald
Dewsbury, University of Florida